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SANDIA MOUNTAIN WILDERNESS
AN URBAN PERSPECTIVE

by

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of Requirements

Professional Development for Outdoor

Recreation Managers

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85

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Title: Sandia Mountain Wilderness, An Urban Perspective

Abstract: Sandia Mountain Wilderness (SMW) abuts metropolitan Albuquerque and other smaller urbanized areas, where more than 450,000 residents have a wilderness in their backyard, These people are the predominant users of the SMW and are significant users of other National Forests' resources as well. An important key to establishing effective management of this urban wilderness and other related National Forest areas is to begin to know and understand their users. This study focused on the user as the principal source of impacts to the wilderness. Examined were major characteristics of the Study Area Population including the levels of education (knowledge of wilderness ethics) grasped by the users and the amount of outdoor recreation uses contributed by the study area residents.

TABLE OF CONTENTS

Abstract..... i
Table of Contents..... ii
List of Tables and Figures..... iii
The Idea..... iv

Chapter 1: Introduction and Statement of Problem
Introduction..... 1
Statement of Problem..... 2
Goal and Objectives..... 2
Delimitations..... 3
Definitions..... 4
Limitations..... 4

Chapter 2: Review of Literature
Background: Current Use and Management..... 5
Methodology..... 7
Review of Literature.. 7

Related Research..... 6

Chapter 3: Procedures
Sub Study 1: Evaluation of the WIS Skills Trail..... 9
Sub Study 2: Determination of Recreation Use Contributed by Study Area Users on Other Ranger Districts..... 10
Collection of Other Data..... 12

Chapter 4: Analysis of the Data
Findings
Sub Study 1..... 14
Sub Study 2..... 16

Chapter 5: Summary and Conclusions
Summary..... 26
Conclusions..... 26
Recommendations..... 27

Bibliography..... 28

Appendices Listing..... 29

LIST OF TABLES AND FIGURES

Figure 1	Map of Albuquerque Study Area	page 8
Figure 2	Map of impact of the Sandia Mountain Wilderness	page 13
Figure 3	Graph: Percentage recreation use and Distance from the Study Area Population Center	page 18
Figure 4	Travel Zone Map	page 19

The Idea

Faced with management of urban Wilderness you are left to deal with the coming and going of its users. Deal with them beforehand -- that they might come prepared with decent wildland ethics, proper expectations and respect -- that they might go having left no trace of their visit in silent testimony of appreciation, and restored self that comes from having been touched by the wilderness. --

J. S. Hayden, March 1985

Sandia Mountain Wilderness, which was created by Congress in 1979, along with the remainder of Sandia Ranger District have a burgeoning population of users that have long established patterns of use, including preconceived notions of what the mountain means to them and various sets of expected outcomes for recreational ventures. Concerning the Sandia Mountain and other wildernesses in the Southwest, many aspects of the visitors' established uses, kinds of activities, and favored locations are no longer acceptable to , or appropriate under, proper wilderness management policy. In order to manage the wilderness, the manager must effectuate realistic strategies which foster proper user behavior and allow use of the wilderness resource within the limits of acceptable change. These strategies must take into account the needs and desires of the users, balanced within the realm of the available capacities of the wilderness resource and in coordination with other recreation experiences offered from adjoining lands. That is to say, the Sandia Mountain Wilderness must be carefully managed as an integral portion of a complex combination of resources and opportunities afforded by National Forest, state, city, and private lands. Wilderness management can be accomplished through dealing with internal and/or external factors. Management of Wilderness should strive at every turn to work with the chief factor common to both external and internal aspects of the wilderness resource which is the human user/ consummer.

The study, which might have been more appropriately titled "Urban Wilderness Management--From the Outside In", focused primarily on the human user/consummer as the factor having both the greatest impact to the wilderness and the greatest potential for effecting positive change toward attaining acceptable use of outdoor recreation resources including wilderness. The primary goal for this project is to produce a document of information on the Albuquerque Study Area Population. Following are objectives which were indentified to meet the forgoing goal:

1. Identify areas of knowledge, skills and ethics demonstrated by users whether positive and appropriate or negative and inappropriate.

2. Determine how the Study Area Population impacts other Ranger District recreation resources within one-half day driving distance of Albuquerque.

3. Identify the major kinds of user impacts occurring in selected wilderness areas and suggest which might be targeted for education programs in the Albuquerque area.

4. Propose a plan to bring people and resources together in a continuing program of education to instill a wilderness ethic in the Albuquerque area and promote the concept of the Sandia Mountain Wilderness as an urban wilderness training opportunity.

Delimitations:

This study is concerned with outdoor recreation management in general and with the Sandia Mountain Wilderness in particular within the Sandia Ranger District, Cibola National Forest.

The user population base which is referred to as the Albuquerque Study Area Population (ASAP) is defined as the Albuquerque Metropolitan Area, Bernalillo, Placitas, and the mountain communities of La Madera, Sandia Park-Cedar Crest, Tijeras, Carnuel, Sedillo, Edgewood, Cedro Village, and the developing area of South 14, 217, and County Line Road. This area is within Bernalillo and Sandoval Counties.

Some data obtained for the ASAPwere obtained by polling the Ranger Districts on National Forests within a one-half days driving time from Albuquerque as determined from New Mexico, Arizona, and Colorado official road maps.

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Definitions:

The following terms were used in this study.

Urban Wilderness--A Congressionally designated wilderness located immediately adjacent to, or actually adjoining, any large metropolitan area.

User/Consumer--One who places significant value in, and derives significant value from, the urban wilderness. Values are derived directly (actual visitation and engaging on-site recreational experiences) or vicariously from diverse indirect uses, such as enjoying SMW as part of the local scenic backdrop or just knowing that this wilderness exists. "Wilderness" in general has its own general advocacy. Each wilderness has its particular user/consumer base.

Limitations:

Each of the previously listed objectives and others not listed could form the basis for in depth studies of their own. While only brief coverage could be given the subjects selected, more attention was deserved. Future studies may be desirable to carry out this line of investigation.

5. Trail from lower tram terminal to La Luz Trail not well marked.
6. Motor vehicle encroachment.
7. Disturbing others/leaving evidence of visit, i.e., dogs, fire rings, litter ...
8. Visitor use by large groups.

The investigator agrees in general with the foregoing and would emphasize that crowding was not listed as a major concern by visitors. Since the time of River's study, the unauthorized use of mountain bikes has increased and is periodically reported by concerned visitors.

Management of the SMW continues without the benefit of a formal plan. On-the-ground administration is being accomplished through active volunteer participation. Most of the 53 miles of system trails are under adoption for light maintenance by Adopt-A-Trail organizations. Heavy maintenance and reconstruction are accomplished through contracts. Patrolling, policing, site restoration, and visitor contact are handled by the Wilderness Information Specialist Program, a core group of dedicated volunteers.

The present management and administration situation is far from being adequate. As opportunities arise and to the extent possible some, but by no means all, problems and deficiencies are remedied. Yet major "housekeeping" problems continuing to plague the wilderness are the inability to keep up with the destruction and theft of signs and the

rehabilitation of uoverused sites. Problems such as these can eventually be brought under control through normal means.

This paper will be most useful to the managers of wilderness areas near large concentrations of people.

Methodology:

This study incorporated treatment of several related subjects areas. A review of literature was required to gain insights into user desires. Review and reanalysis of previously gathered recreation use data, such as trail counts, were needed to understand some characteristics of local users. Evaluation of the Wilderness Skill Trail exhibit shed some light on the level of participant understanding of wilderness ethics (Substudy 1). An informal questionnaire was used to determine the influence (impact) of the Albuquerque study Area Population on other Ranger Districts (Substudy 2).

Review of literature:

Westfornet at Fort Collins was requested to search for titles concerning urban wilderness management, characteristics of large population areas, and outdoor recreation desires of city dwellers. Several leads were found; some were used in this study.

Albuquerque City Library, main branch, and the Coronado Room, Southwest Collection, University of New Mexico, were most helpful in providing data.

FIGURE I: ALBUQUERQUE STUDY AREA

ALBUQUERQUE STUDY AREA
ALBUQUERQUE
Rio Rancho
Paradise Hills
Corrales
Bernalillo
Algodones
Placitas
Los Cerrillos
Madrid
Golden
Stanley
Moriarty
Clines Corners
Edgewood
Tijeras
Cedar Crest
Sandia Crest Rec. Area
Sandia Park
Sandia Ind. Res.
Isleta Indian Res.
Los Padillas
Los Lunas
Bosque Farms
Peralta
Valencia
VALENCIA
Belen
Jarales
Veguita
Sabinal
Abeytas
Las Nutrias
Bernardo
Salado
La Joya
San Acacia
Chamizal
Lemitar
Magdalena
Escondida
Socorro
Luis Lopez
Laborcita
San Antonio
Bingham
Claunch
Brushy Mtn.
Cedarvale
Mountainair
Abo
Punta
Manzano
Manzano Mts. Nat. Mon.
Manzano Mts. Forest
Willard
Torreon
Estancia
Pedernal
Tajique
TORRANCE
Grants
Milan
Bluewater
San Mateo
Prewitt
Ambrosia Lake
Thoreau
Crownpoint
Pueblo Pintado
Pueblo Bonito
Blanco Trading Post
El Huertano Trading Post
Lake Valley
Counselors
Lindrith
Gallina
Cuba
La Jara
Coyote
Youngsville
Abiquiu
Abiquiu Dam
Velarde
Alcalde
Chimayo
Española
Los Alamos
White Rock
Tesuque
Pojoaque
Cundiyo
Truchas
Trampas
Las Trampas
Rinconada
Ojo Caliente
Canjilon
El Vado Lake State Park
Cebolla
Vallecitos
Cristobal
Taos
Ranchos de Taos
Arroyo Hondo
Rio Arriba
Santa Fe
Jemez Springs
Jemez Ind. Res.
Jemez State Mon.
Fenton Lake State Park
Cabezon Pk. 7785'
Cabezon Peak Nat. Landmark
Torreon
White Horse
Lake Valley
Navajo Indian Reservation
Laguna Ind. Res.
Acoma Indian Reservation
Acoma
Laguna
Paguate
Cebolleta
Cebolleta Mesa
Cebolleta Pk. 8762'
Mesa del Oro
Lucero Mesa
Cerro Verde 7000'
Mt. Taylor 11,301'
Zuni Mts.
Malpais Nat. Rec. Site
La Ventana Natural Arch
Cabezon Peak Nat. Landmark
Rio Puerco
Rio Grande
Rio Chama
Rio Jemez
Rio Salado
Ladron Mts.
Ladron Pk. 8176'
Datil Mts.
Datil
Datil Well Nat. Rec. Site
Gallinas Mts.
Gallinas Pk. 8615'
Magdalena Mts.
Mt. Withington 10,115'
San Mateo Mts.
San Mateo Pk. 11,301'
Chupadera Mesa
Jicarilla Mts.
Capitan Mts.
Lincoln
White Oaks
Carrizo Pk. 9658'
Encinoso
Jicarilla
Ancho Mts.
Corona
Gran Quivira Nat. Mon.
Tajique
Pedernal 7576'
Cerro Pedernal
Cerro Negro
Mesa Gigante
Mesa Chivato
Mesa Prieta
Cerro Colorado
Cerro Blanco
Cerro Pelon
Cerro Tomé
Cerro Verde
Cerro Cabezon
Cerro Pedernal
Cerro Negro

Two substudies were conducted to get a idea of how much knowledge the people in the ASA had concerning wilderness and to better understand how much recreation use the ASAP was contributing to the National Forest locally and within a half-day's driving distance of Albuquerque.

Substudy 1--WIS program Skill Trail participant evaluation.

The Skills Trail is an education tool used by Sandia District Wilderness Information Specialist (WIS) volunteers to test participant knowledge of wilderness history, philosophy, ethics, and use. It also teaches the participant. It was adapted by the volunteers for New Mexico wildernesses from the original developed in Region 4. A series of twenty-one self-guided stations present concepts about the wilderness. Questions were asked for each concept. Answers were provided for immediate feedback at each station. A response sheet was provided to record answers.. See Appendix for facsimile.

To obtain demonstration data for this study, the Skills Trail was set up in a ballroom at the University of New Mexico on January 30, 1985. During the hours of 9 a.m. through 2:30 p.m., volunteers were on hand to introduce participants to the Skills Trail, answer questions, and give information. During the data gathering period, over 100 university students and faculty participated. No background was obtained from the participants. No one was restricted. Thirty-three anonymous response sheets were voluntarily left for analysis.

(Substudy 1 cont'd)

It was assumed that results obtained would not reflect the level of knowledge and understanding of the general population due to the participant's being more highly educated. The reponse sheets were scored and the results recorded by numbers correct, not correct, or not completed. The percentages of wrong answers were then tallied by categories of: (a) 10 to 24 percent questions answered wrong, (b) 25 to 74 percent, and (c) 75 percent and over.

Those questions receiving a score greater than 25 percent were isolated. Thus, questions answered incorrectly by 25 percent or more were considered as (a) significant indicators of weaknesses either in the participant's knowledge, skill, or experience, or (b) problems with understanding the question.

Substudy 2--Determination of the total recreation use by Albuquerque Study Area Population on National Forests within one-half day driving distance:

This substudy consisted of a nonstatistical polling of the investigator's counterparts on Ranger Districts over a broad area. The object was to determine for the Study area Population: (a) estimate how much of the total recorded recreation use they contributed; (b) what percentage of that use took place in wilderness, undeveloped areas, and developed sites, (c) what were the

(Substudy 2 cont'd)

managers' perceptions of ASAP behaviors, and (d) managers' recommendations for informing and/or educating ASAP.

Ranger Districts selected were those requiring less than a half day's driving time from Albuquerque to District headquarters. Districts on the following National Forests were queried:

Apache-Sitgreaves (partial)

Carson

Cibola

Gila

Lincoln

Rio Grande

San Juan

Santa Fe

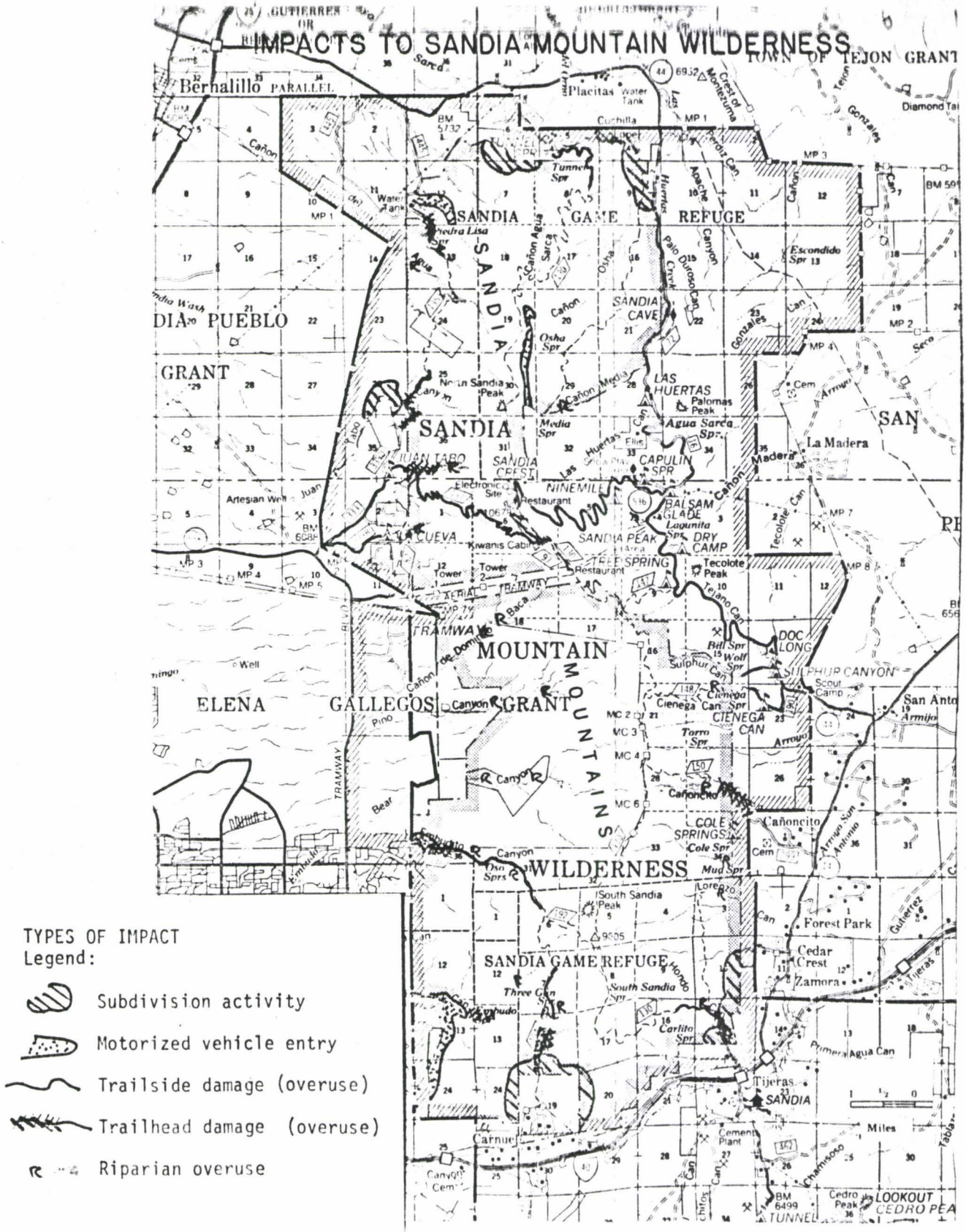
A map on the back of the response sheet defined the Albuquerque Study Area (ASA). Participants were asked to limit responses to the ASA. A response sheet was sent to each of 46 Ranger Districts, Sandia District included. (See Appendix__ for facsimiles and data.) Forty districts provided responses. Data were recorded and arrayed in several different ways. Indications of ASA preferences and managers' perceptions were inferred.

Collection of other data:

Information relative to documentation of impacts within the Sandia Mountain Wilderness remains to be properly collected and recorded. For benefit of the readers of this paper, a map showing the major user impact areas is presented. This brief information is based on the investigator's intimate, yet incomplete, knowledge gained over eleven years on the Sandia District. The map should be viewed to point out obvious relationships of urban/wilderness. See Figure 2.

Similarly, insights on the characteristics and influences of the study population are presented based on investigator's experience and observations.

FIGURE 2:


IMPACTS TO SANDIA MOUNTAIN WILDERNESS
TOWN OF TEJON GRANT
Bernalillo PARALLEL
SANDIA GAME REFUGE
SANDIA PUEBLO GRANT
SANDIA CAVE
LAS HUERTAS
SANDIA CREST
CAPULIN SPR
NINEMILE
BALSAM GLADE
SANDIA PEAK
DRY CAMP
TEE SPRING
TRAMWAY
MOUNTAIN
ELENA GALLEGOS GRANT
MOUNTAINS
WILDERNESS
SULPHUR CANYON
CIENEGA CAN
COLE SPRINGS
SANDIA GAME REFUGE
Forest Park
Cedar Crest
Zamora
Tijeras
SANDIA
Miles
LOOKOUT
CEDRO PEA
TYPES OF IMPACT
Legend:
Subdivision activity
Motorized vehicle entry
Trailside damage (overuse)
Trailhead damage (overuse)
Riparian overuse

Findings: The following presents several different areas of investigation which when examined together demonstrate short comings common to wilderness users of the Albuquerque Study Area:

Research by others:

Local research has demonstrated major problems caused predominantly by ASA users on the Sandia Mountain Wilderness as follows:

-Lack of preparation, lacking knowledge and skills

-Ecological-environmental damage, vandalism

-Endangering self and others,

-Violations of law, closures etc; especially motorized vehicles

-Disturbing others, lacking consideration for others 1.e. littering gathering in large noisy groups, pets out of control etc.

Substudy 1:

One method used in learning how much a particular segment of the ASAP know about wilderness was accomplished by examining the relative success of university students and faculty in answering questions presented via the Wilderness Skill Trail exhibit. The Skill Trail questions and answers can be reviewed in Appendix I.

More than 75 percent of the participants correctly answered most of the questions. There was no data at this point to compare these results with any other segment of the population. However, questions where fewer than 25 percent of the participants answered correctly

(Substudy 1 cont'd)

indicate areas of of lacking knowledge, skills, or experience. Those questions are briefly discussed:

2b: power boats are allowed on wild and scenic rivers if local policy allows. Inference: unfamiliar law, also limited exposure in the dry Southwest.

3-1(d): Most fire are caused by lightning. Inference: lack of knowledge.

3-2(a): Most wilderness fires burn less than ¼ acre. Inference: lack of knowledge.

3-3(a): By suppressing all wilderness forest fires, man increases potential for large scale fires. Inference: lack of knowledge, lack of appreciation of ecological role of fire.

3-5(b): Man caused fires cause more damage,,,because,,, occur during high fire danger. Inference: lack of knowledge

10-1d: Choosing a "correct" campsite. Inference: none station and question improperly presented i.e., confusing

10-2f: Camping not allowed in Sandia Mountain Wilderness-- false. Inference: lack of knowledge.

(Substudy 1 cont'd)

12-2: Wilderness waste--how durable: orange peel, tin can, aluminum, cigarette butt, paper plate, plastic, etc. Inference: lack of knowledge. Observation: this one suprised most participants.

16-1c: ...cause of acute mountain sickness--large change in accustomed altitude... . Inference: Lack of knowledge; also recent medical findings not well publicized.

16-4b: Lightning... where is the safest place to be. Inference: lack of knowledge or knowing and using the wrong information.

This brief analysis of the WIS Skill Trail indicates some lack of knowledge in most of the concepts and situations presented, especially those having to do with the following:

Lightning

Wildfire: damages, causes, role of natural fire.

Disposal of waste

Safety

Substudy 2:

Data gathered about the Albuquerque Study Area Population from Ranger Districts over the predetermined area establish quantitatively its role as recreation user base:

(Substudy 2 cont'd)

Polling of 45 Ranger Districts determined that a grand total of 10,533 M (thousand) Recreation Visitor Days (MVD of MRVD) use (all activities) were reported during FY 1984. Of this total, as determined from a compilation of each manager's estimate, the Albuquerque Study Area Population contributed 2,449 MVD (23%). Overall , ASAP engaged 396.7 MVD (4%) in twenty-three different wilderness areas, 1065.9 MVD (10%) in activities on general undeveloped areas, and 986.9 (9%) in developed sites.

Considering the broad recreation categories of wilderness, undeveloped, and developed by 50 mile travel distance zones, there were several general indications of ASAP recreation desires and patterns of use:

--The amount of use in the three categories diminishes with distance. See figure 3.

--There is a strong increase in all three categories within the 201-250 miles travel zone due to a proportionately larger acreage of National Forests having many popular attractions.

--Two-thirds of the developed site use occurred within 100 miles of Albuquerque, Sandia and Jemez Districts received the brunt of that use.

--Recreation use in the last travel zone (250miles) showed 8 percent of the total for the zone.

FIGURE 3: STUDY AREA RECREATION USE AS PERCENTAGE OF TOTAL USE AS AFFECTED BY DISTANCE FROM ALBUQUERQUE:

REFER TO: APPENDIX TABLE 3

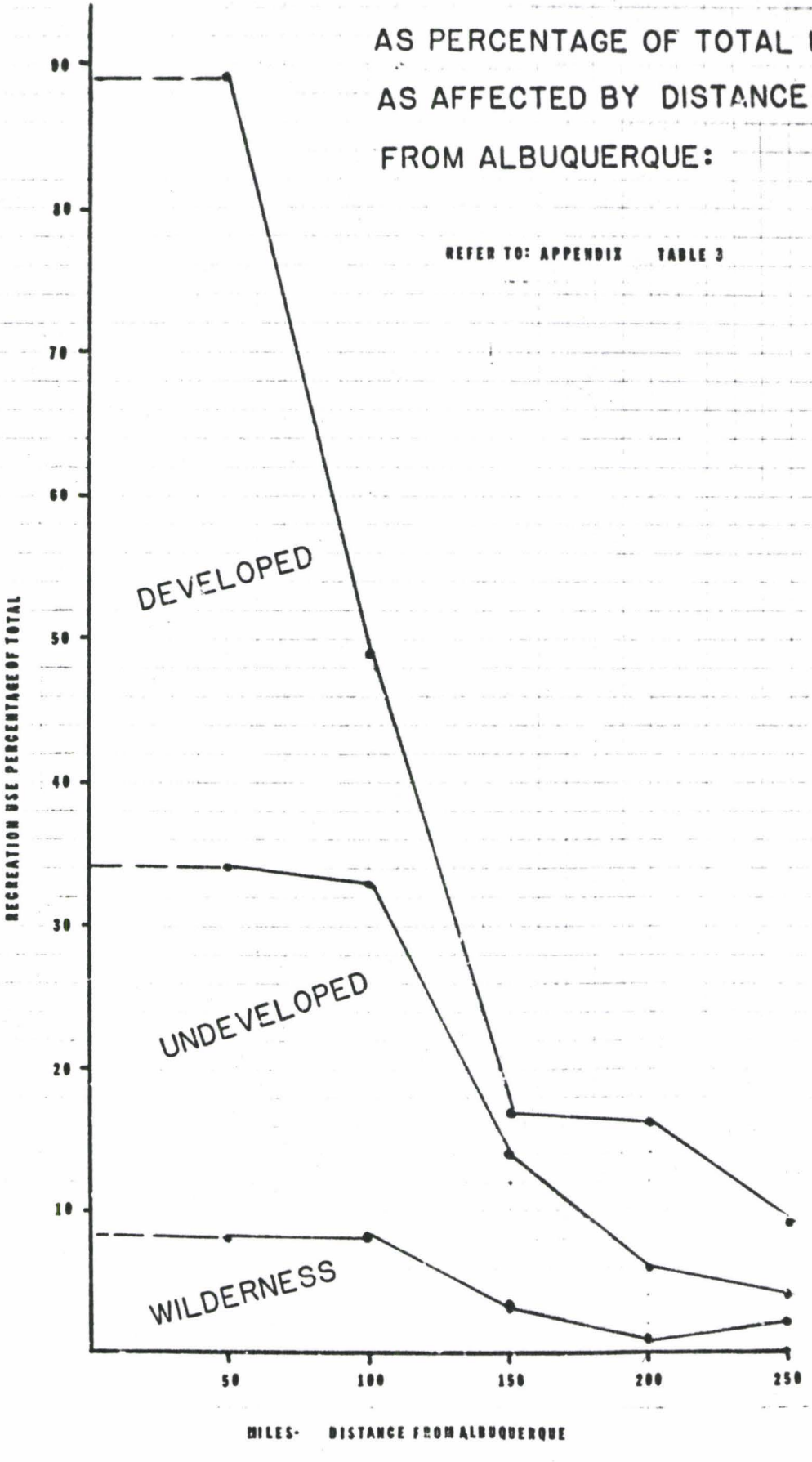
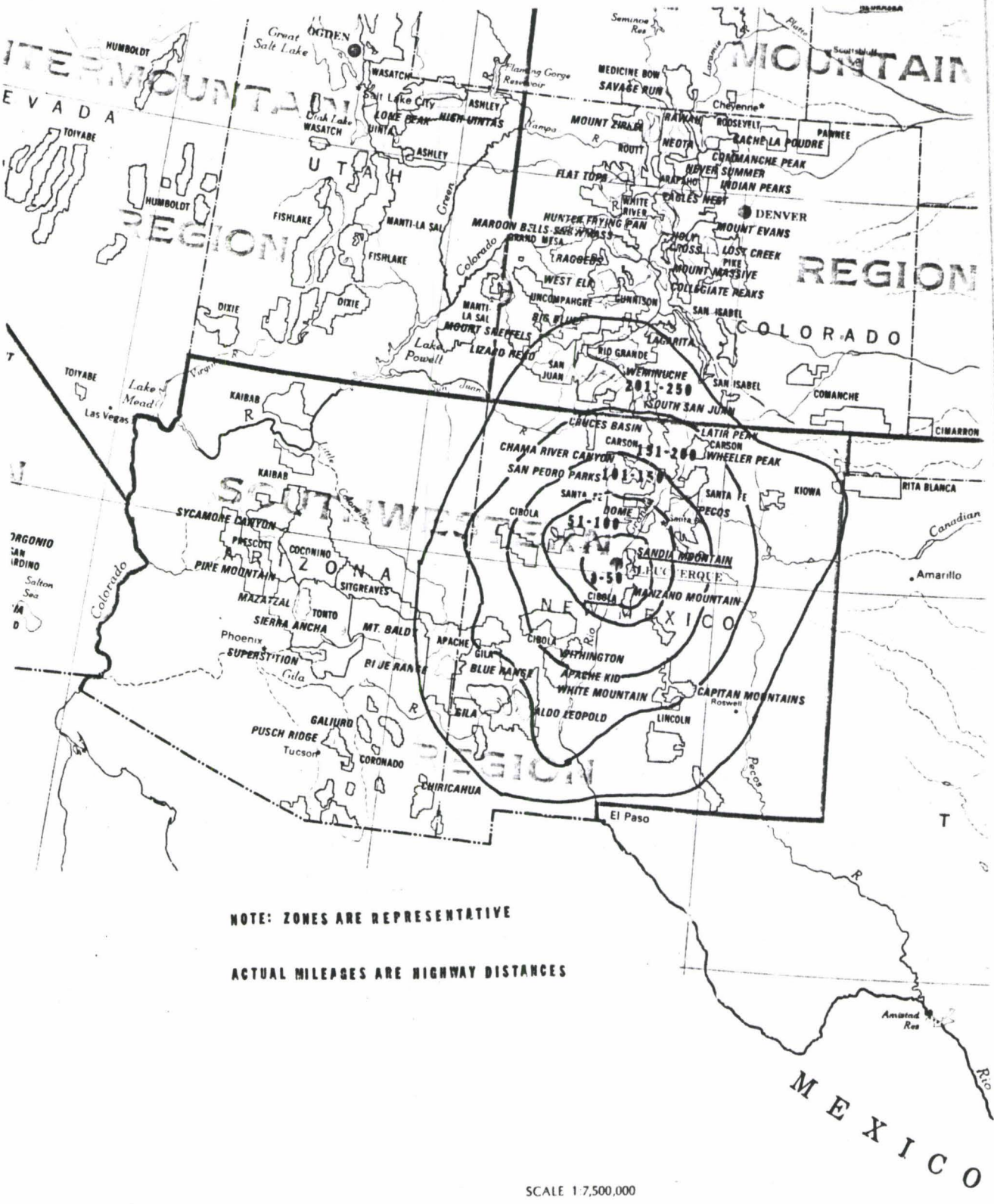


FIGURE 4:

TRAVEL ZONE MAP



(Substudy 2 cont"d)

Recreation use (all kinds) on the Sandia Ranger District amounted to about 597.9 MVD or almost 6% of the overall total. Of that amount 532.7 MVD or nearly 89% came from the Albuquerque area users.

Following are the comments the managers gave concerning behavior traits they associated with ASA users:

Positive comments:	Number of Responses
Use well spread out	1
Better behaved than typical West Texas population	1
Back packers well behaved	1
General positive overall (opinion of ASAP)	1
High level of concern regarding management direction	1
More respect for (natural) resources	1
Better equipped	1
Better land ethic	1
Inquire in advance of arrival	1
Wilderness users take better care of resource than do other users	1
	10

Negative comments:	
Driving off road in wet months	1
Majority of lost persons (are ASAP)	1
Leave unattended campfires	1
Totally amoral	1
Majority of violation notices for occupancy and parking (issued to ASAP)	1
Disrespect of private property	1
Poor back country ethics	1
Worst litterers (hunters)	1
Lack consideration for facilities and other users	5
Prone to litter	4
Misuse ATV in developed sites	1
Lack information regarding where to go	1
Wood/tree cutting boundaries	1
Vandalizing on the increase	1
None, No, etc.	11
No comment	7
Did not respond	8
	47
	57 Total

Note: Some Districts provided more than one response.

(Substudy 2 cont'd.)

The forgoing served to identify the major kinds of impacts occurring on many Ranger Districts. As follows, the managers gave responses concerning ways in which user behavior might be modified. These major points could be targeted for education programs in the Albuquerque area:

Comments	Number of Responses
(a) Educate them (general) or,	2
Proper ORV use	6
Trail ethics	7
Backwoods skills	2
Rules and regulations	3
Climatic differences/be prepared	2
Local customs	2
Value of public land	1
Management role of Forest Service	3
(b) Take stronger law enforcement action	1
	29
(c) Do things to better inform them	
Make available more maps, signs, brochures	1
Increase awareness of other users	1
Instruct them on where to go, what to do	1
(d) Create willingness to pay for wilderness experience	1
(e) Award proper behavior	1
Encourage people to inquire in advance of visit	1
	6
None	10
No response	17
	27
	62 Total*

*Number of Districts = 45; some answered more than one question

Observations by the investigator not documented elsewhere categorize the Study Area Population in terms of external factors affecting the Sandia Mountain and other wilderness areas:

Users--The users were the real targeted subject of the study. These folks use the resource more or less as Congress had in mind in enacting the various wilderness acts. The user or potential user becomes the focus of the manager's attention in programs or strategies to bring education and appropriate behavior.

Abusers--The abusers, whenever and wherever present, become special targets for immediate contact and convincing that the SMW is not the place to ride bicycles, motorbikes, 4-wheel drive, all-terrain, or any motorized, mechanical device. Hang gliders and bicycles are specifically excluded. Some abusers do not know that their activity is prohibited, and others do not care, and either run the risk of being caught or challenge authorities to catch them. The latter type often is the product of increasing amounts of former "cycling" or "dig" areas being absorbed in the urban sprawl. Abusers must receive special attention to change their behavior. The abuser is often the most difficult to bring under management, because they do not belong to groups or they seek intentional anonymity. Those observed on the Sandia District tend to be loners.

Near residents--Residents living along the National Forest boundary near to the SMW have the effect of partially or totally limiting access by the public in direct physical manners or perhaps more far reaching, by exerting local political influence through zoning, blocking efforts to develop public trailheads and parking, obtaining parking restrictions, etc. The boundary residents often use the wilderness, and in this regard can be thought of as users or abusers. The boundary resident must be considered as a very special opportunity to assist in affecting proper management of the wilderness.

Rural area residents--Less easily described, yet of growing importance and influence to management of the National Forest as well as the wilderness, are the residents of the rural areas. The once scattered communities surrounding the mountain are being interconnected by rapidly increasing development. Once open lands are being covered in the same manner as in the urban areas. These folks are taking a harder look at anything that is planned for the National Forest. They are becoming more vociferous and influential in matters concerning access and use of the National Forest. These folks tend to be recent arrivals who are unaware of how the National Forest is managed (or even if), or who the managers are. They tend to be very possessive of the private land and do not seem to be concerned that anyone other than themselves can access or use the forest.

Public at large--The most challenging population factor has to be the public at large, who at the present do not fall into any of the other categories. Further they, the silent majority, are the most difficult to assess in terms of their actual and potential impact and influence on the wilderness. These folks are likely to be occasional users of forest roads and developed sites and attendant activities. They also may at any time become a wilderness user. They are in the vast majority within the Study Population.

Recreation providers--Other factors external to the wilderness, having at least indirect influence, are the existence of other areas of National Forest, State, County, and city which offer outdoor recreation experience opportunities. The users of these areas and facilities satisfy many of their recreation demands there and may or may not later seek the wilderness. It seems very important to have sufficient numbers and kinds of recreation opportunities to fulfill or meet as much of this user demand as might be reasonable or possible. Achieving that is a tremendous challenge which must be addressed by all who are in the business of supplying recreation opportunities and facilities.

Others, supporters--In a broad sense, all organizations and agencies who deal in public information and education comprise an important factor to consider in the management of the SMW.

Each of the categorized groups can and should be dealt with separately and uniquely in order to instill proper, positive outdoor recreation/ wilderness behavior.

Summary of Procedures and Findings:

This project provides a basic information document of some of the characteristics of the Albuquerque Study Area Population's relationship to use of wilderness and outdoor recreation resources on neighboring National Forests. Areas of knowledge, skills, and ethics demonstated by users were partially identified in Substudy 1, Substudy 2, research by others,and the investigator's categorization of user/consummers. The extent of impact by ASAP to Ranger District recreation resources within one-half day's driving distance was sought in Substudy 1. Major types of impacts on recreation areas and wilderness within the broader study area and major points targeted for possible education programs were highlighted in Substudy 1 and 2.

Conclusions:

Having examined various aspects of the Albuquerque Study Area Population's relationship to wilderness and other outdoor recreation resources it has been shown that:

ASAP of approxomately 450,000 people contribute significantly to use in at least 24 different wildernesses from the nearby Sandia Mountain to several which are more than 250 miles away.

ASAP is concentrated in a fairly small geographic area, a situation lending itself to ease in reaching out with programs.

ASAP cause similar positive and negative impacts to wilderness regardless of distance from Albuquerque. Programs which improve user behavior of ASAP would improve the management situation on many Ranger Districts in their communting area.

ASAP represents both problem (people who cause negative impacts) and solution (people and resources to be applied to programs to improve user behavior).

Recommendations:

1. Develop plan to present programs to inform and educate ASAP about wilderness use and ethics. Capitalize on the opportunities talent, and experience of others to reach out.
2. Establish Sandia Mountain Wilderness as a "training wilderness". Manage this wilderness to provide a range of learning and training opportunities for users to experience wilderness settings from developed to primitive.
3. Continue existing and build new volunteer programs that serve the wilderness.

One objective was not met in doing this study, that being: (to) "Propose a plan to bring people and resources together in a continuing program of education to instill a wilderness ethic in the Albuquerque area ...". While beyond the scope of this project, such a plan is still needed and will be developed in time.

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Appendices

Appendix	Subject
1	Substudy 1 Table 1
2	Substudy 2 Facsimile Table 1 Table 2 Table 3

Appendix 1 Table 1
WIS Skills Trail
Tabulation of Responses
UNM 1/30/85

Station No.	Question No.	Right No./%	Wrong No./%	Not Completed No./%	% of Participants answering incorrectly 10-25%	25-50%	51+ %
1	1	30/91	3/9	0			
	2	29/88	3/9	1/3			
2		8/24	25/76				X
		26/79	7/21		X		
		29/88	4/12		X		
3	1	16/48	16/48	1/3		X	
	2	5/15	27/82	1/3			X
	3	17/52	15/45	1/3		X	
	4	28/85	4/12	1/3	X		
	5	7/21	25/76	1/3			X
4	1	20/79	4/12	3/9	X		
	2	27/82	3/9	3/9	X		
5	1	29/88	1/3	3/9			
		30/91		3/9			
		30/91		3/9			
	2	30/91		3/9			
6	1	30/91	1/3	2/6			
	2	29/88	2/6	2/6			
	3	30/91	1/3	2/6			
7	1	31/94		2/6			
	2	31/94		2/6			
	3	31/94		2/6			
	4	31/94		2/6			
	5	29/88	2/6	2/6			
8	1	22/67	9	2/6			
9	1	24/73	7/21	2/6	X		
10	1	9/27	20/61	4/12			X
	2	18/55	12/36	3/9		X	
11	1	23/70	5/15	5/15	X		
	2	24/73	3/9	6/18			
12	1	22/67	6/18	5/15	X		
		23/70	5/15	5/15	X		

Appendix 1 Table 1
WIS Skills Trail
Tabulation of Responses
UNM 1/30/85

Station No.	Question No.	Right No./%	Wrong No./%	Not Completed No./%	% of Participants answering incorrectly 10-25%	25-50%	51+ %
12	2	4/12	17/52	12/36			X
		2/6	18/55	13/39			X
		2/6	18/55	13/39			X
		0	20/61	13/39			X
		0	20/61	13/39			X
		2/6	18/55	13/39			X
13	1	22/67	5/15	6/18	X		
14	1	27/82	0	6/18			
	2	26/79	0	7/21			
	3	27/82	0	6/18			
	4	26/79	0	7/21			
15	1	25/76	1/3	7/21			
		26/79		7/21			
		25/76		8/24			
		26/79		7/21			
	2	22/67	3/9	8/24			
	3	25/76	1/3	7/21			
	4	24/73	2/6	7/21			
16	1	14/42	14/42	5/15		X	
	2	28/85		5/15			
	3	22/67	6/18	5/15			
	4	10/30	18/55	5/15			
17	1	27/82	2/6	5/15			
	2	27/82		6/18			
	3	11/33	16/48	6/18		X	
		23/70	4/12	6/18	X		
18	1	28/85		5/15			
	2	27/82	1/3	5/15			

APPENDIX 2 Facsimile

RESPONSE SHEET

Please respond to the following questions and forward this sheet using the enclosed envelope before February 15. The map area indicated on the back of this sheet depicts my study population which is Albuquerque and vicinity; having an estimated population of approximately 400,000 people.

Thinking of recreation use on the _____ District during FY'84:

1. What was your District's total reported recreation use? ____mvds _____visits

2. What percent of question 1 would you estimate was contributed by users from the Albuquerque Study Area?

3. Of the number given in question no. 2, what percent was involved in recreation activities taking place in:

____%_____Wilderness
(indicate name)

____% in the general undeveloped area

____% in developed sites

4. Are there any behavior traits, positive or negitive, that you associate with the study area users?

5. Imagine that it is possible to modify (improve) the behavior of our study area users. Based on your knowledge of user impacts, in what ways would you suggest their behavior be modified?

Return to:
Sandia Ranger District
Star Rt. Box 174
Tijeras, N.M. 87059
Attention: John Hayden

Appendix 2 Table 1

Recreation Use Contributed by Albuquerque Study Area Recreationists to Other Ranger District in New Mexico, Eastern Arizona, and Southern Colorado.
(Compilation of Data from questions 1, 2, and 3 of response form)

HWY Distance from ABQ	District	FY'84 Rim Use All	% Est. Use by A.S.A.	Est. Amount All(MVD)	% Est. Wldrns	Est. Amount Wldrns(MVD)	% Est Undeveloped	Est Amount Undeveloped (MVD)	% Est developed	Est Amount Developed
143	Canjilon	123.7	20	24.7	5	1.2	35	8.7	60	14.80
114	El Rito	115.0	15	19.3	-	0	70	13.1	30	5.2
169	Jicarilla	28.0	5	1.4	0	0	100	+1.4	0	0
115	Penasco	235.0	20	47.0	70	32.9	15	7.0	15	7.1
129	Taos	34.5	7	2.4	0	0	30	.7	70	1.7
141	Tres Piedras	87.0	20	17.4	2	1.7	3	2.6	15	13.1
151	Questa	380.0	15	57.0	6	3.4	27	15.4	67	38.2
78	Mt. Taylor	290.6	20	58.1	0	0	80	46.4	20	11.6
104	Magdalena	126.0	20	25.2	2	.50	90	22.7	8	1.8
78	Mountainair	41.7	85	35.4	18	6.4	23	8.1	59	20.9
273	Clayton	DID NOT RESPOND								
281	Texline	3	+	+	+	+	+	+	+	+
149	Black Range	1172.1	15	175.8	5	8.8	88	154.7	7	12.3
245	Luna	91.0	25	22.8	3	.7	67	15.3	30	6.8
241	Glenwood	230.0	7	16.1	57	9.2	29	4.6	14	2.3
220	Mimbres	264.0	2	5.3	25	1.3	25	1.3	50	2.7
206	Reserve	151.0	20	30.2	15	4.5	45	13.6	84	12.1
238	Silver City	188.0	6	11.3	70	7.9	25	2.8	5	.6
252	Wilderness	115.6	5	5.8	80	4.6	4	.3	16	.0
182	Quemado	75	25	18.8	0	.0	25	4.8	75	14.0
191	Ruidoso	3	10	.3	2	.0	80	.2	18	.1
220	Cloudcroft	593.0	20+	118.6	0	.0	25	29.6	75	89
275	Carlsbad	25.0	5	1.3	0	.0	3	.8	2	.5
237	Mayhill	50.0	5	2.5	0	.0	40	1.00	60	1.5
128	Coyote	23.7	25	5.9	60	3.5	30	1.8	10	.6
81	Cuba	121.0	80	96.8	35	33.9	28	27.1	37	37.8
202	Alamos RD	158.0	4	6.3	15	.9	20	1.3	65	4.1
202	Conejo RD	DID NOT RESPOND								
15	Sandia	597.9	89	532.7	9	49.7	29	153.3	62	329.7
248	Del Norte	1144.0	10	114.4	50	57.2	5	5.7	45	51.3

Appendix 2, Table 1 (Continued)

Recreation Use Contributed by Albuquerque Study Area Recreationists to Other Ranger District in New Mexico, Eastern Arizona, and Southern Colorado.

(Compilation of Data from questions 1, 2, and 3 of response form)

HWY Distance from ABQ	District	FY'84 Rim Use All	% Est. Use by A.S.A.	Est. Amount All(MVD)	% Est. Wldrns	Est. Amount Wldrns(MVD)	% Est Undeveloped	Est Amount Undeveloped (MVD)	% Est developed	Est Amount Developed
259	Saquache	310.8	3	9.3	50	4.6	33	3.1	17	1.6
211	Durango	276.0	11	30.4	0	0	6	16.6	5	13.8
257	Dolores				DID NOT RESPOND					
239	Mancos				Shows Negligible Rec Use					
212	Pagosa Springs				DID NOT RESPOND					
254	Pine	292.0	20	58.4	26	15.2	51	29.8	23	13.4
58	Jemez	654.2	80	523.4	2.5	13.1	63.1	330.3	34.4	180.1
123	Las Vegas	115.3	20	23.1	45	10.4	45	10.4	10	2.3
89	Pecos	561.1	50	280.6	39	109.4	35	98.2	26	73.0
60	Tesuque	283.3	10	28.3	3	8.5	3	8.5	4	11.3
84	Espanola	138.5	5	6.9	60	4.1	40	2.8	0	0
246	Alpine	40.0	3	1.2	3	.5	3	.5	1	.2
277	Heber	255.4	1	25.6	0	0	77	19.7	23	5.9
221	Springerville	738.0	1	7.4	1	2.4	1	2.5	1	2.5
279	Lakeside	402.0	1	4.0	0	+	?	+	?	4.0
	TOTALS:	10,533.4		2449.4		396.7		1065.8		986.9

Appendix 2 Table 2

Albuquerque Study Area Recreation Use on Other Districts

Data Trials

Distribution of Use Data by Travel Distance Zone and Ranger District

By 50 miles (Highway Mileage) Distance increments		FY'84 RIM Use All	ASA	Wilderness	Undeveloped	Developed
1-50 mile	Sandia	597.9	532.7	49.7	153.3	329.7
	Subtotal	597.9	532.7	49.7	153.3	329.7
51-100 mile	Mt. Taylor	290.6	58.1	--	46.4	11.6
	Mountainair	41.7	35.4	6.4	8.1	20.9
	Cuba	121	96.8	33.9	27.1	35.8
	Jemez	654.2	523.4	13.1	330.3	180.1
	Pecos	561.1	280.6	109.4	98.2	73
	Tesuque	283.3	28.3	8.5	8.5	11.3
	Espanola	138.5	6.9	4.1	2.8	--
	Subtotal	2090.4	1029.5	175.4	521.4	332.7
101-150	Conjilon	123.7	24.7	1.2	8.7	14.8
	El Rito	115.	17.3	-	12.1	5.2
	Penasco	235.	47	32.9	7.0	7.1
	Taos	34.5	2.4	--	.7	1.7
	Tres Piedras	87.	17.4	1.7	2.6	13.1
	Magdalena	126	25.2	.5	22.7	1.8
	Black Range	1172.1	175.8	8.8	154.7	12.3
	Coyote	23.7	5.9	3.5	1.8	.6
	Las Vegas	115.3	23.1	10.4	10.4	2.3
	Subtotal	2032.3	338.8	59	220.7	58.9
151-200	Jicarilla	28	1.4	-	1.4	0
	Questa	380	57.	3.4	15.4	38.2
	Quemado	75	18.8	-	4.8	14.
	Ruidoso	3	.3	-	.2	.1
	Subtotal	486	77.5	3.4	21.8	52.3

Appendix 2 Table 2 (Continued)
Albuquerque Study Area Recreation Use on Other Districts
Data Trials
Distribution of Use Data by Travel Distance Zone and Ranger District

By 50 miles (Highway Mileage) Distance Increments		FY'84 RIM Use All	ASA	Wilderness	Undeveloped	Developed
201-250	Luna	91.	22.8	.7	15.3	6.8
	Glenwood	230.	16.1	9.2	4.6	2.3
	Mimbres	264.	5.3	1.3	1.3	2.7
	Reserve	151	30.2	4.5	13.6	12.1
	Silver City	188	11.3	7.9	2.8	.6
	Cloudcroft	593	118.6	-	29.6	89.0
	Mayhill	50	2.5	-	1.	1.5
	Alamos	158.	6.3	.9	1.3	4.1
	Del Norte	1144.	114.4	57.2	5.7	51.3
	Durango	276.	30.4	-	16.6	13.8
	Alpine	40	1.2	.5	.5	.2
	Springerville	738.	7.4	2.4	2.5	2.5
	Subtotal	3923	366.5	84.7	94.8	186.9
250+	Wilderness	115.6	5.8	4.6	.3	.9
	Carlsbad	25	1.3	-	.8	.5
	Saguache	310.8	9.3	4.6	3.1	1.6
	Pine	292.	58.4	15.2	29.8	13.4
	Heber	255.4	25.6	-	19.7	5.9
	Lakeside	402.	4.0	-	-	4.0
	Subtotal	1403.8	104.4	24.4	53.7	26.3

APPENDIX 2 TABLE 3: Summary of Recreation Use Data

Travel Distance Zone	Total Rec. Use (M visior days)	Est. Use by Study Area	Est. Use in Wilderness	Est. Use in Undeveloped	Est. Use in De eloped
1-50	(6) 597	532.7 (18) 89	49.7 (13) (8) 9	153.3 (14) (26) 29	329.7 (33) (55) 62
51-100	(20) 2090.4	1029.5 (35) 49	175 (44) (8) 17	521.4 (49) (25) 51	332.7 (34) (16) 32
101-151	(19) 2032.3	338.8 (12) 17	59 (15) (3) 17	220.7 (21) (11) 65	58.9 (6) (3) 17
151-200	(5) 486	77.5 (3) 16	3.4 (1) (<1) 4	21.8 (2) (5) 28	52.3 (5) (11) 67
201-250	(37) 3923	366.5 (12) 9	84.7 (21) (2) 23	94.8 (9) (2) 26	186.9 (19) (5) 51
250 or more	(13) 1400.8	104.4 (4) 8	24.4 (6) (2) 23	53.7 (5) (4) 51	26.3 (3) (2) 25
	10533.4	2449.4 23	396.7 16	1065.8 44	986.9 40

Guide to reading entries:

MVD res, use by category

%age of column

% use of study area

% of Total rec. use